NAVAL WAR COLLEGE Newport, R.I.

COMMANDER'S INTENT—

AN AEROSPACE TOOL FOR COMMAND AND CONTROL?

by

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A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Military Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

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Commander's Intent—An Aerospace Tool For Command And Control?

Commander's intent is a time tested ground force tool for focusing decentralized decision making and initiative. Subordinate's knowledge of the intent from the two levels of command above has proven vital to focusing all theater energies and action toward achieving operational level goals. Commanders must arm subordinates with their intent in preparation for decisions made amidst the battle's fog, friction, and chaos which so often overcome the original planning. As a result, the Army, Marine Corps, and Joint Staff have extensively incorporated the concept into their doctrine. Air power's unique combat command and control structure, which dissociates intermediate level mission tasking from unit command, has restrained Air Force use of the technique. Yet, there are no major C² constraints on institutionalizing commander's intent. Additionally, there is simple logic to doctrinally embracing a wartime command concept that mirrors current Air Force Total Quality Management philosophy. More rigorous use of the concept has theoretical potential for increasing air power's operational tempo. Decentralized decision making, guided by commander's intent and complemented by the coming information revolution, can help accelerate decision-action cycles beyond the ATO's 2-3 day limits. Finally, the increasing national emphasis on joint teamwork mandates multi-service standardization of this concept and cultivation of an Air Force officer corps that is thoroughly proficient with the tool.

The Air Force must catch up with joint doctrine and the standardized practices of the ground forces with whom the Air Force is teamed. The Air Force should doctrinally define and embrace the employment of this tool in a manner appropriate to the unique aerospace organizational structure. Borrowing from the Army and Marine Corps, the Air Force must institutionalize commander's intent through common, service-wide instruction in all professional training from flight and tactics schools to war college and commander's courses.

Table of Contents

Section	<u>Page</u>
ABSTRACT	1
PREFACE	1
HISTORY	1
USED—BUT NOT DEFINED	2
SERVICES' USE OF COMMANDER'S INTENT	3
TOOL OF DECENTRALIZED EXECUTION	4
LAND AND AIR DIFFERENCES IN COMBAT COMMA	ND STRUCTURE7
COMMANDER'S INTENT IN THE ARMY AND MARINE CORPS	
AEROSPACE POTENTIAL WITH COMMANDER'S INTI	
HARNESSING INITIATIVEATO FLEXIBILITY	
SO WHAT'S MY POINT?	15
NOTES	17
BIBLIOGRAPHY	Accesion For NTIS CRA&I DTIC TAB Unannounced Justification By Distribution / Availability Codes Dist Avail and / or Special

Commander's Intent—

An Aerospace Tool For Command and Control?

Planning for employment of joint teams begins with articulating and understanding the objective, purpose of the operations, and commander's intent (the commander's vision of the end state to be achieved).

Joint Pub 3-0, Doctrine for Joint Operations¹

Preface

This article examines the mission tasking concept of "commander's intent" from an Air Force perspective. What is it? Why do both the Army and Marine Corps consider it a vital combat leadership technique for all levels of command while the Air Force puts little emhasis on it? Could greater use of commander's intent make a good Air Force command and control system even better? The answer to this last question is definitely yes.

History

No plan survives contact with the enemy.

Field Marshal Helmuth von Moltke, Sr., 1800-1891.²

Over 150 years ago Karl von Clausewitz defined the fog, friction, and fear in combat that conspire against the rigid execution of a commander's best laid plans. One of Clausewitz's students—Field Marshal von Moltke—adroitly accounted for these wartime realities in planning and executing the campaigns that ultimately united the modern German nation by 1871.³ Von Moltke knew that he could not reliably anticipate the course of an operation beyond first contact with the enemy. To compensate, he employed decentralized decision making through "mission-oriented" orders (Auftragtaktik). This command technique directed what to do and why it must be done without specifying how to do it. Von Moltke's mission-oriented orders, attempted to enlist "the total independent commitment of troops from the lowliest private up." His goal was to unleash subordinate initiative in order to both accommodate the unexpected and capitalize on opportunity. Improvement of this "mission tactics" technique during the First and Second World Wars helped produce Germany's consistent operational and tactical success against superior odds.

Key to von Moltke's mission-type tasking is the concept of "commander's intent." Instead of detailed instructions on how to execute, the commander must provide a concise written or verbal

description of his vision of the operation's general form, purpose, and what he intends to achieve.

This statement should offer subordinates "insight into the objectives at one [command] level, or possibly even two, above their own." It should be a "subordinate's guidepost as he strives to deal with the unexpected" by insuring the mission remains clear in the subordinate's mind.

The German style mission tactics and the concept of commander's intent have received significant US Army and Marine Corps attention since the early 1980's. Both services recognized commander's intent to be a critical command tool for operational level success in maneuver style warfare. As a result, the Army and Marine Corps repeatedly emphasize the concept in basic doctrine and prescribe detailed technique for all levels of command. In the 1990's many joint publications have established the use of commander's intent as standard procedure for guiding inter-service operations.

This brings us to the motivation for this article—the US Air Force has **NOT** doctrinally embraced commander's intent as a command tool for service wide use. Generally the only Air Force applications are the select positions requiring familiarity with the concept for interface with the Army or the highest command levels. (Examples are joint command positions and direct Army support operations such as control of close air support).

Used—But Not Defined

Air Force commanders often effectively employ most elements of commander's intent and mission-type order guidance. This is especially true at the higher operational level of the Joint Force Air Component Commander (JFACC) and the lowest tactical level of the flight lead. However, at all Air Force command levels vital elements of commander's intent are inconsistently employed —such as passing the "purpose" of an operation or mission. While commander's intent is codified in basic Army, Marine Corps, and joint doctrine, the concept is largely absent from Air Force basic doctrine. The Air Force does not rigorously define either the term or technique nor dictate its use at levels below the JFACC—possibly signaling a joint operations disconnect. This relative Air Force indifference to commander's intent will be reviewed in the following sequence:

- Comparison of the Army's and Marine Corps' rigorously defined and applied commander's intent technique with the Air Force's institutionally less definitive and much less frequent use.
- Comparison of institutional differences between land and air forces that have made commander's intent a less obvious aerospace tool.
- Discussion of potential benefits possible with doctrinal Air Force employment of commander's intent at all command levels.

Services' Use of Commander's Intent

The Army, Marine Corps, Air Force, and Navy command philosophies all provide common doctrinal justification for utilizing the commander's intent concept. The following discussions do not include the Navy who, in most respects, parallels the Air Force's minimal use of commander's intent as a leadership concept.

Tool of Decentralized Execution

The Army, Marine Corps, and Air Force all emphasize, within their basic doctrine, the importance of what the Air Force labels centralized control and decentralized execution. The actual labels vary, with Marines using "decentralized command" and the Army 's "decentralized decision authority. However, the meanings are all compatible with their emphasis on centralized guidance and planning responsible for focusing and synchronizing all effort—complemented by decentralized decision making and subordinate initiative in the execution. Both the Army and the Marine Corps identify "commander's intent" as key to effectively decentralizing execution and decision making into workable spans of control. Both the Army and Marine Corps have rigorously standardized instruction on commander's intent definition and technique. In the following examples, note both the detail and service wide standardization of "intent" as doctrine.

Commander's Intent—Army Style

The Army defines and emphasizes commander's intent within its basic doctrine for operations. The 1993 Army Field Manual (FM) 100-5 *Operations*, defines commander's intent as follows:

- A concise expression of the purpose of an operation
- Describes the desired end state¹¹
- Must be understood two echelons below the issuing commander
- It is the single unifying focus for all subordinate elements
- Its utility is to focus subordinates on what has to be accomplished in order to achieve success, even when the plan...no longer applies, and to discipline their efforts toward that end.¹²
 FM 100-5 also highlights the critical role a clear and focused commander's intent plays in synchronization of all activities in time and space to collectively achieve operational objectives.¹³
 The Army repeatedly references and expands on commander's intent in eight additional doctrine manuals that supplement the basics in FM 100-5 (see Table 1 on last page).

Marine Corps "Mission Tactics"

The Marines likewise describe the importance of commander's intent in their basic doctrine manual, Fleet Marine Field Manual (FMFM) 1, Warfighting. Commander's intent is a vital element of their "mission tactic" of assigning subordinates mission-type orders without specifying how the missions must be accomplished. The Marine Corps teaches commanders to specify the method of execution only to the degree required for coordination with other units. FMFM 1 stresses that the mission-type order must describe the desired result or **intent** of the action. FMFM 1 additionally makes the point that, while a changing situation may make the original tasking obsolete, the intent should remain valid as a guide for action.

For the Marines, commander's intent provides "unity, or focus" to decentralized initiative. Commander's intent complements the "mission tactic" of assigning a subordinate mission without specifying how the mission must be accomplished. It leaves "the manner of accomplishing the

mission to the subordinate, thereby allowing him the freedom—and establishing the duty—to take whatever steps he deems necessary based on the situation. The senior prescribes the method of execution only to the degree that is essential for coordination." The manual highlights how this subordinate freedom in initiative encourages the high tempo of operations desired.¹⁴

The Marine Corps University—which standardizes Marine Corps doctrine and technique taught at all USMC schools from the Basic School through the War College—has standardized the following elements of commander's intent within their operations orders:

- The commander's intent must include a statement of the end state of the battlefield as it relates to his force, the enemy force, and the terrain.
- The purpose of the operations.
- The enemy's actions and intentions.
- An identification of the enemy's vulnerability or center of gravity.¹⁵
 The Marine Corps University offers the following additional commander's intent guidance:
- Every Marine must know the commander's intent two levels up.
- ...the shortage of time usually will result in the commander's intent statement being limited to the statement of the end state of the battlefield as it relates to friendly forces, the enemy forces, and the terrain.
- A technique used to describe the end state of the battlefield is to begin the statement with, "Final result desired is." 16

The Marines define and advocate commander's intent as a command technique in nine additional doctrine manuals (see Table 1 on last page). The Army and Marine Corps both consider this concept to be a vital element of decentralized execution. As a result, both services procedurally required commander's intent be included in operations orders issued by all levels of command.

Commander's Intent Helps Tie Together the Levels of War

Commanders at all levels should have a common understanding of the conditions that define success.

Joint Pub 3-0, Doctrine for Joint Operations¹⁷

The Joint Chiefs of Staff have embraced commander's intent as a vital tool for harmonizing the strategic, operational, and tactical level actions of diverse military forces. The time tested method helps unify the will and efforts of all services to collectively contribute to the ultimate operational or strategic goals. Fourteen joint service publications detail use of commander's intent for the operational level commanders who are responsible for joint campaigns and major operations (see Table 1 on last page). The joint force commander (JFC) and his joint force air and land component commanders (JFACC and JFLCC) are operational level commanders. Operational level commanders design, coordinate, and support the joint campaigns and operations that cumulatively attain national policy at the strategic level of war. However, execution is largely in the hands of the many subordinate level leaders, who create the tactical plans, choose the engagements and earn the battle victories that collectively produce operational success. The operational level leadership cannot plan and control most tactical level details. Instead, decentralized execution relies on tactical leadership's initiative at the point where tactical level commanders adapt the operational plan to the realities of combat. To guide his decisions, the tactical level commander must know his boss's intent as well as the intent from an additional level above his boss. Commander's intent offers the cohesive focus from the top down that ensures tactical level leaders have their boss's end state goals in mind as they decide which battles and engagements to prosecute. Commander's intent helps tie the lowest tactical decisions to the highest strategic goals.

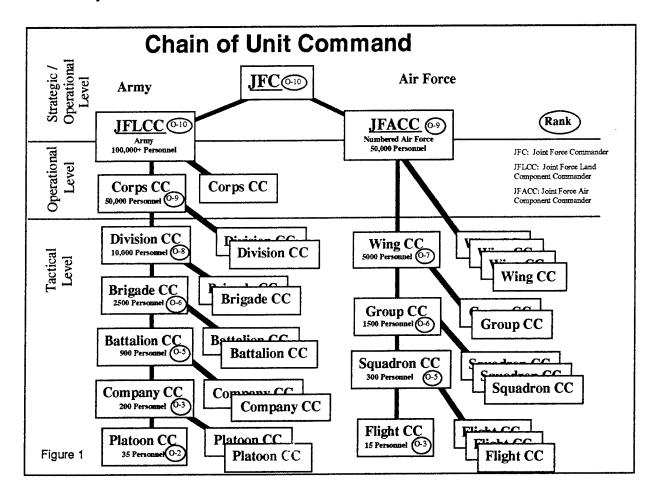
Air Force "Intent"

The sister services emphasize "intent" as a specific concept in their basic doctrine. In the *Basic Aerospace Doctrine* Air Force Manual (AFM) 1-1, the Air Force simply mentions the intent of combatant and component commanders in a literal sense. ¹⁸ Unlike the two land services, the Air

Force does not rigorously define commander's intent nor advocate it as a decentralized execution tool. The Air Force's unique organizational structure offers some explanation for this difference.

Land and Air Differences in Combat Command Structure

The command structure of land forces has encouraged evolutionary development of the commander's intent concept. Though the Air Force seems to have a similar command structure, the following discussion highlights how an air force's command structure in combat differs substantially from that of land forces.



Commander's Intent in the Army and Marine Corps

The land forces' fairly straight-forward command structure lends itself to the commander's intent concept. Figure 1 depicts the Army and Air Force components of a possible joint force for a major regional contingency. Note that the pyramiding of each Army command layer allows intent

to propagate down through each succeeding level. Marine Corps command organization is similar.

The commanders at each point in this chain—for example the corps, division, brigade, battalion, company, and platoon—are responsible for choosing the sub-objectives and targets they assign to their subordinate commanders in support of the superior's mission and intent. The line of administrative command is the same as the combat C² line though which each level of mission orders and target selection will pass. In other words, the Army and Marine Corps chains of command encompass both unit command and combat control.

Increasing emphasis on commander's intent has been a logical evolution within this system that has so many intervening levels of command stretching from the operational level JFLCC to the tens-of-thousands of platoon commanders at the lowest tactical level. Commander's intent has helped preserve the tempo of operations despite the span of control challenges created by the increasing size of armies over the centuries. Though the commander's intent concept is very applicable to ground force command structure, an air force's structure differs significantly.

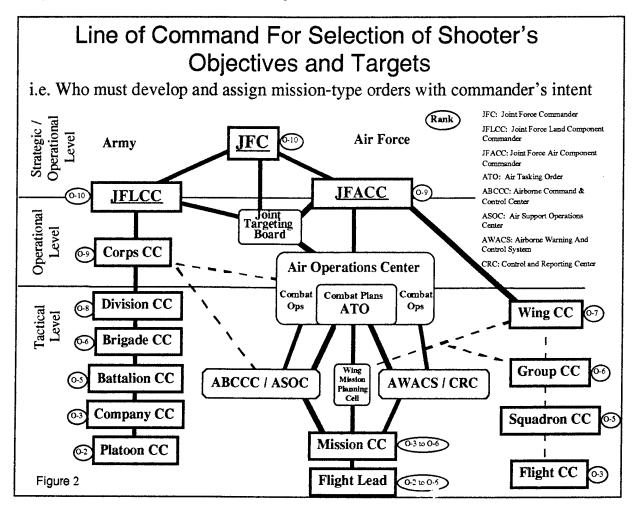
Air Force "Mission Tactics?"

Air forces have a less traditional combat organization through which battlefield control often does not accompany unit command. Figure 1 displays the administrative unit command lines of a joint air component based on a numbered air force. This is not the line of combat command through which mission tasking and combat control pass. Instead, Figure 2 depicts a common aerospace C² chain.

Air power's potential for significant operational or even strategic level effect often depends more heavily than ground forces on the tenet of centralized control. This centralized control is the theater level planning, coordination, and direction that focuses available aerospace power on those enemy vulnerabilities that will reap the greatest effect in pursuit of the JFC's operational design. This system significantly confuses the development of subordinate level commander's intent.

How and Why It Is Different

At each level, ground units can generally focus on a limited geographic area within which the unit commander can sub-task his subordinate commanders. In comparison aerospace units, such as interdiction wings and squadrons, may receive tasking to attack locations throughout the theater at one time. The Air Force does not assign individual unit responsibility for a particular region. Aerospace platform range and speed are best employed with the geographic flexibility of massing anywhere in the theater as required by operational level design. Since all interdiction units in the theater can be used to hit a particular target, most of the target selection and mission assignment must issue from a centralized, operational level control mechanism.



The JFACC owns this planning mechanism. Joint Pub 3-56.1, Command and Control for Joint Air Operations, specifies that when a JFACC is designated, the JFACC's Air Operations Center (AOC) produces the air tasking order (ATO). In the JFACC's name, this "staff" organization assigns the mission tasking for the lowest tactical units of two-ship aircraft elements and even details the specific targets for most of the interdiction and strategic attack sorties.¹⁹

Decentralized execution lives in the ATO format. It provides mission-type orders to the units on targets or objectives, resources, timing, boundaries, support, etc. without specifying how to accomplish the mission. Specific mission technique is largely left to a unit's mission planning cell or the mission commander leading the forces. Unlike their ground force counterparts, aerospace wing, group and squadron commanders are seldom part of the planning process of developing intermediate level mission tasking.

Similar to the planning phase, battlefield control for decentralized aerospace execution diverges from the chain of unit command. When aircraft are airborne or on alert the C² line passes from the JFACC though the Air Operations Center and the various levels of control agencies directly to the aircraft mission commanders and flight leads. Note the line bypasses the unit commanders. Wing, group, and squadron commanders ensure resource availability and assign aircrews and aircraft to fill the ATO tasking. Though outside of the combat C² line, these unit commanders lead the critical unit esprit de corps, discipline, and tactics selection. To this extent, the combat command role of air force unit commanders is more characteristic of the land force fire support units such as artillery rather than maneuver units such as infantry or armor.

Much of the Air Force's combat command falls on the air control system that links the airborne flight lead to the JFACC. These intervening control agencies, such as the Air Support Operations Center (ASOC) for close air support (CAS) or the Airborne Warning And Control System (AWACS) for offensive counter air (OCA) are not currently considered "commanders" in their own right. Instead, their authority is similar to that of the JFACC's staff, directing action in his name. Curiously though, these control agencies choose and assign sub-objectives and targets in support of the JFACC's operational design much the same as the intermediate level ground commanders. They own tactical control (TACON) of the aircraft under their direction. This begs the question—to be discussed later—of whether greater standardization and use of "intent" to and from these combat control agencies might not offer the benefits reaped by the Army and Marine Corps?

Figure 2 highlights air and ground differences in the span of control challenge. Note the ground and air structure difference in the number of "commanders" between the operational level and the lowest tactical level. Aerospace forces work with a much narrower span of control. This helps explain the lesser aerospace emphasis on a doctrinal concept meant to guard tempo, flexibility, and initiative in a challengingly large span of control.

The Missing "Why"

As discussed, the ATO abides by the mission tactics concept by directing what to do without generally going too far into the how, other than key coordination issues. Yet the ATO is often not clear on the why, or mission purpose, that would be part of a commander's intent statement. The JFC provides definitive commander's intent to the JFACC. Additionally, the JFACC provides his end goal vision as intent to his higher level Air Operations Center staffs who are selecting targets and allocating missions in the ATO. Formulation and issue of commander's intent below this level is much less consistent. Mission commanders and flight leads designing and leading the tasked sorties certainly attempt to offer their wingmen the equivalent of intent. However, their intent judgement is only tenuously founded on the intent from the two command levels above since the cryptic ATO tasking may be the only reference from which to infer the desired mission end state.

The wing and squadron commanders provide general interpretations on risk management related to intent judgements. However there is no institutionalized reference from superiors for this judgment. A bottom line here is though commander's intent is not part of Air Force doctrine, the technique is consistently used at the top operational level and the lowest tactical level. The Air Force would profit from more rigorous and pervasive use of commander's intent.

Aerospace Potential with Commander's Intent

The following points highlight how the Air Force has nothing to lose and much to gain from doctrinal definition and service wide application of commander's intent as a procedure. First, our better commanders essentially already employ commander's intent as part of the Air Force's

advocated leadership technique. Second, it offers potential for focusing combat efforts at operational tempos higher than the ATO's three-day cycle. Finally, commander's intent is already a joint procedure that the Air Force must understand and skillfully exercise for effective interservice operations.

Harnessing Initiative

Commander's intent is simply working with "that vision thing" so heavily emphasized in the Air Force's Total Quality Management (TQM) instruction. TQM leadership stresses that dissemination of an organizational vision to our top quality people is the first critical step in harnessing their initiative to achieve our goals. This is the essence of commander's intent. In recognizing TQM's potential contributions to daily operations, the Air Force must also seriously consider how it can incorporate the same "vision" concept into the main line of work—war. The Army and Marine Corps simply have a leg up on the Air Force in academically defining and procedurally prescribing battlefield "vision" in mission tasking.

ATO Flexibility

Procedural employment of commander's intent would increase Air Force operational tempo by helping to focus decentralized execution. The AOC currently develops ATO tasking 24 to 48 hours out, with some targets chosen 72 hours or more in advance of attack. This long cycle would constrain tempo if execution adhered too rigidly to the ATO. Instead, the ATO is flexibly adapted in execution by decentralized decision making at all levels of the air control system allow. This decentralized execution enables the JFACC's air control system to exploit opportunity and operate inside the opponent's decision cycle. Though mid level air control agencies work with tactical level assets, such as individual aircraft; their decisions often involve target sets that have operational or even strategic significance. In the future, the information age and the digitization of the battlefield promise to dramatically increase availability of near real time targets such as scud launchers, tank columns, or mobile headquarters. As a result, an even greater number of significant targeting decisions will likely migrate from the JFC's/JFACC's targeting board or ATO

shop to the mid level air control agencies. As doctrine, commander's intent would offer a method of focusing the air control system's judgment in these decisions. Commander's intent would help ensure that these subordinates chose targets, engagements, and battles with the JFACC's operational vision in mind as opposed to simply random attrition.

The Air Force must cultivate the habit of <u>intermediate level</u> commander's intent in order to create this tool for operational focus. Simply retransmitting the JFC's or JFACC's intent directly to the flight lead or AWACS controller is not enough. In an Army analogy, a platoon commander can make much more direct use the intent statements from his company and battalion commanders than he can a verbatim copy of the JFC's intent. Each level of the Air Force C² system requires similarly usable words from the immediately adjacent source of mission guidance.

As highlighted in the command structure discussion, the Air Force must emphasize the "command" function of the C² agencies such as AWACS. These intermediate air control agencies tactically "command" the aircraft under their TACON similar to the land force division, brigade, or battalion commanders who receive tactical control of additional subordinate units. As an example of the consequences of this analogy, an AWACS mission commander must receive the JFACC's intent defining the operational vision of the whole air operation from two levels above. In addition the AOC commander must provide his operational-tactical vision for the day's air action from one level higher. Either the AWACS mission crew commander or Airborne Command Element (ACE) officer must then translate this superior's intent into their own tactical level intent tailored to the AWACS crew for their on-station time period. Next, the AWACS crew members must define their intent to the extent that they can pass, time permitting, an abbreviated version to the aircraft they are controlling. A procedurally standardized location in the ATO could be the source of the JFACC's intent. The same is true for the AOC commander's intent for the day's operations and Combat Plan's intent for specific missions in the ATO. Nevertheless, the ATO is still a 2-3 day long process so a more timely source of daily updated intent must also be available for the C² agencies.

All the C² agencies, such as the Command and Reporting Center (CRC), the Airborne Command and Control Center (ABCCC), and the ASOC, must receive, tailor, and issue

commander's intent. The Air Force must standardize "intent" procedure at each level within the air control system. This game plan requires these C² agencies to fully shoulder their "command" responsibilities as battlefield decision makers and "intent" producers. These intermediate level C² positions will make the battlefield decisions that may best apply the coming revolutions in information and reconnaissance. Commander's intent technique is crucial to taping this potential.

An air control agency already steeped in the methodology of the commander's intent issued by the supported Army corps commander is the Army-Air Force ASOC. This fact emphasizes the point that commander's intent expertise is a requirement for joint operations.

A Jointness Requirement?

By fait accompli, the Army, Marine Corps and joint staff emphasis on commander's intent requires equivalent Air Force attention to the concept. Joint publications specify that the JFC will employ commander's intent in his command relationship with the JFACC. Air Force support of the Army, such as CAS, requires understanding and application of the supported ground commander's intent. Table 1 at the end of this paper demonstrates how pervasive the concept is throughout Army, Marine, and joint doctrine as compared to the minimal Air Force reference.

The Army's and Marine Corps' professional training and command systems provide their officers experience in interpreting senior commander intent at each level of rank and command, beginning as second lieutenants. Additionally they become proficient at designing and disseminating their own "intent." Many Air Force leaders work informally with the concept at the lower tactical levels (for example, as pilots). However the flight, squadron, group and wing command assignments do not formally offer opportunity to build on the skill. Proficiency with the commander's intent concept is absolutely critical to the JFACC's and his staff's support of the JFC and interaction with the other services. Similarly, an Air Force JFC should have the same career long proficiency with creating and disseminating commonly defined commander's intent that a senior Army or Marine Corps officer would possess. This jointness issue alone provides significant Air Force motivation to institutionalize the concept at all levels of training and employment; thus ensuring officers grow up with the technique.

So What's My Point?

The wording of...orders I left to [the staff], with the exception of one paragraph, the shortest, which I invariably drafted myself—the intention. This gives or should give, exactly what the commander intends to achieve. It is the dominating expression of his will by which, throughout the operation, every officer and soldier in the army will be guided. It should, therefore, be worded by the commander himself.

Field Marshal Sir William J. Slim, Commander in Burma Theater, 1941-1945²⁰

Commander's intent is a time tested ground force tool for focusing decentralized decision making and initiative. Subordinate's knowledge of the intent from the two levels of command above has proven vital to focusing all theater energies and actions toward achieving operational level goals. Commanders must arm subordinates with their intent in preparation for decisions made amidst the battle's fog, friction, and chaos which so often overcome the original planning. As a result, the Army, Marine Corps, and Joint Staff have extensively incorporated the concept into their doctrine. Air power's unique combat command and control structure, which dissociates intermediate level mission tasking from unit command, has restrained Air Force use of the technique. Yet, there are no major C^2 constraints on institutionalizing commander's intent. Additionally, there is simple logic to doctrinally embracing a wartime command concept that mirrors current Air Force TQM philosophy. More rigorous use of the concept has theoretical potential for increasing air power's operational tempo. Decentralized decision making, guided by commander's intent and complemented by the coming information revolution, can help accelerate decision-action cycles beyond the ATO's 2-3 day limits. Finally, the increasing national emphasis on joint teamwork mandates multi-service standardization of this concept and cultivation of an Air Force officer corps that is thoroughly proficient with the tool.

The Air Force must catch up with joint doctrine and the standardized practices of the ground forces with whom the Air Force is teamed. The Air Force should doctrinally define and embrace the employment of this tool in a manner appropriate to the unique organizational structure. Borrowing from the Army and Marine Corps, the Air Force must institutionalize commander's intent through common, service-wide instruction in all professional training from flight and tactics schools to war college and commander's courses.

Publication	Table 1 Reference to Commander's Intent in Doctrinal Publications					
FM 100-5 Operations 22 FM 100-7 The Army in Theater Operations 20 FM 1-100 Principles for Army Aviation Combat Ops 12 FM 100-10 Combat Service Support 5 FM 100-17 Mobilization, Deployment, Redeployment 4 FM 100-103 Army Airspace Command & Control in Combat 4 FM 44-1 Air Defense Artillery Employment 2 FM 90-2 Battlefield Deception 2 FM 101-5-1 Operational Terms and Symbols 1 MARINE CORPS (10 out of 54 pubs) FMFM 2-7 Fire Support in MAGTF Operations 11 FMFM 6-18 Fire Support Coordination 11 FMFM 5-60 Control of Aircraft and Missiles 10 FMFM 5-60 Control of Aircraft and Missiles 10 FMFM 4 Combat Service Support 2 FMFM 4 Combat Service Support 2 FMFM 3-22-1 UAV Company Operation 1 FMFM 3-22-1 UAV Company Operation 1 <td>Publication</td> <td>Title</td> <td></td>	Publication	Title				
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NOTES

- ¹ Joint Chiefs of Staff, Joint Pub 3-0, *Doctrine for Joint Operations*, (Washington DC: U.S. Government Printing Office, Sep 1993), p. III-1.
- ² US Naval War College, "Joint Military Operations Syllabus," Unpublished course syllabus. US Naval War College, Newport, RI: 1995, p. 184.
- ³ Michael D. Krause, "Moltke and the Origins of Operational Art," *Military Review*, September 1990, pp. 28-44.
- ⁴ Martin van Creveld, Steven L. Canby, Kenneth S. Brower, Air Power and Maneuver Warfare, (Maxwell AFB, AL: Air University Press, 1994), p. 7. Borrows from the World War II Wehrmacht's regulations.
- ⁵ Milan N. Vego, "Operational Art Lecture Notes," Unpublished lecture note handout. US Naval War College, Newport, RI: 14 March 1995, p. 11. Though commonly translated as "mission-type orders" or "mission tactics", a more accurate translation of Auftragtaktik may be "task-oriented orders".
- ⁶ Martin van Creveld, Steven L. Canby, Kenneth S. Brower, *Air Power and Maneuver Warfare*, (Maxwell AFB, AL: Air University Press, 1994), pp. 3 8.
- ⁷ Milan N. Vego, "Operational Leadership" addendum to Naval War College to NWC 4001, Operational Art: A Book of Readings, 21 March 1995, p. 6.
- ⁸ John L. Romjue, From Active Defense to AirLand Battle: The Development of Army Doctrine 1973-1983, (Ft Monroe, Va: US Army Training & Doctrine Command, June 1984), pp. 58-59.
- ⁹ US Department of the Air Force Manual (AFM) 1-1, Volume II, Basic Aerospace Doctrine of the United States Air Force, (Washington DC: U.S. Government Printing Office, March 1984), pp 130-131.
- ¹⁰ US Navy Department, Fleet Marine Field Manual (FMFM) 1, Warfighting, (Washington DC: U.S. Government Printing Office, March 1989), p. 65 and U.S. Department of Army, Field Manual (FM) 100-5, Operations, (Ft Monroe, Va: US Army Training & Doctrine Command, 1993), p. 2-6.
- 11 Desired End State: At the strategic and higher operational levels this is "the set of required conditions that achieve the strategic objectives." At these levels it normally connotates diplomatic, economic, and informational conditions in addition to the desired or required military conditions. At the lower levels it generally refers only to the military end state. US Department of Defense, Joint Pub 3-0, Doctrine for Joint Operations, p. III-2.
- ¹²U.S. Department of the Army, Field Manual (FM) 100-5, *Operations*, (Ft Monroe, Va: US Army Training & Doctrine Command, 1993), p. 6-6.

¹³ Idib., p. 2-9.

¹⁴ US Navy Department, FMFM 1, Warfighting, pp. 70-71.

¹⁵ Center of Gravity. The hub of all power and movement upon which everything depends. It is the characteristic, capability, or location from which enemy and friendly forces derive their freedom of action, physical strength, or will to fight. U.S. Department of Army FM 100-5, June 1993, p. 6-7.

¹⁶ Michael L. Ettore, "Commander's Intent Defined," Marine Corps Gazette, April 1993, pp. 52-53.

¹⁷ Joint Chiefs of Staff, Joint Pub 3-0, Doctrine for Joint Operations, p. III-3.

¹⁸ U.S. Department of the Air Force Manual 1-1, Volume I, *Basic Aerospace Doctrine of the United States Air Force*, (Washington DC: U.S. Government Printing Office, March 1992), p. 3.

¹⁹ Joint Chiefs of Staff, Joint Pub 3-56.1, *Command and Control for Joint Air Operations*, (Washington DC: U.S. Government Printing Office, 14 Nov 1994), pp. vii-viii.

²⁰ Field Marshal Sir William J. Sllim, *Defeat Into Victory*, (London: Cassell and Company, Limited, 1956), pp. 210-211.

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